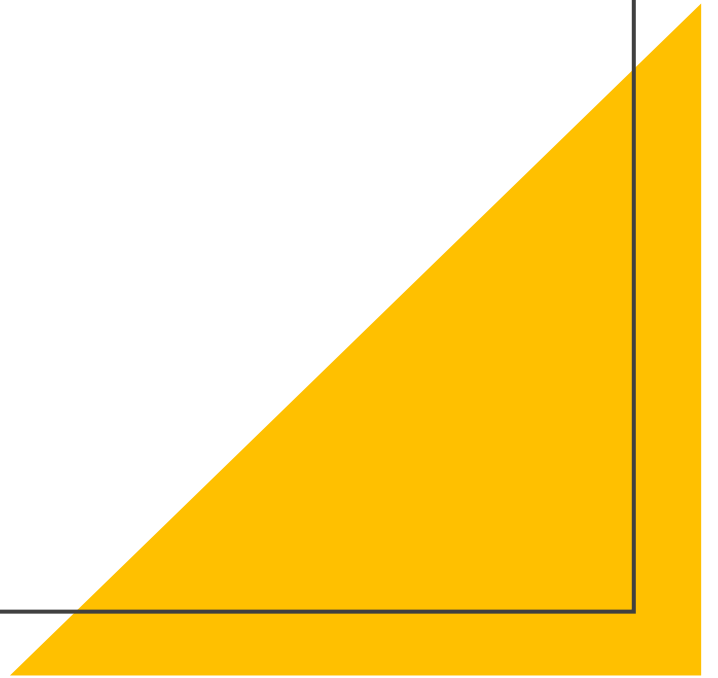# Leading Healthcare Quality Improvement: Tools for Action

Joy Martin, MPH, PMP

Disclosure

I have no significant financial relationships with ineligible companies to disclose.

Background

- Public health professional by training

- Quality Analyst at UNC Health's Institute for Healthcare Quality Improvement (IHQI)
  - IHQI provides QI education, mentorship, and project management support for clinicians working on QI projects

Source: IHQI https://www.med.unc.edu/ihqi/about-us/what-we-do/

Vetting and Selecting QI Projects

What is Quality Improvement?

"Quality improvement is the framework used to systematically improve care. Quality improvement seeks to standardize processes and structure to reduce variation, achieve predictable results, and improve outcomes for patients, healthcare systems, and organizations."

-Centers for Medicare and Medicaid Services

What is Quality Improvement NOT?

❌ Extra work

❌ Looking for "bad apples"

❌ Research

QI
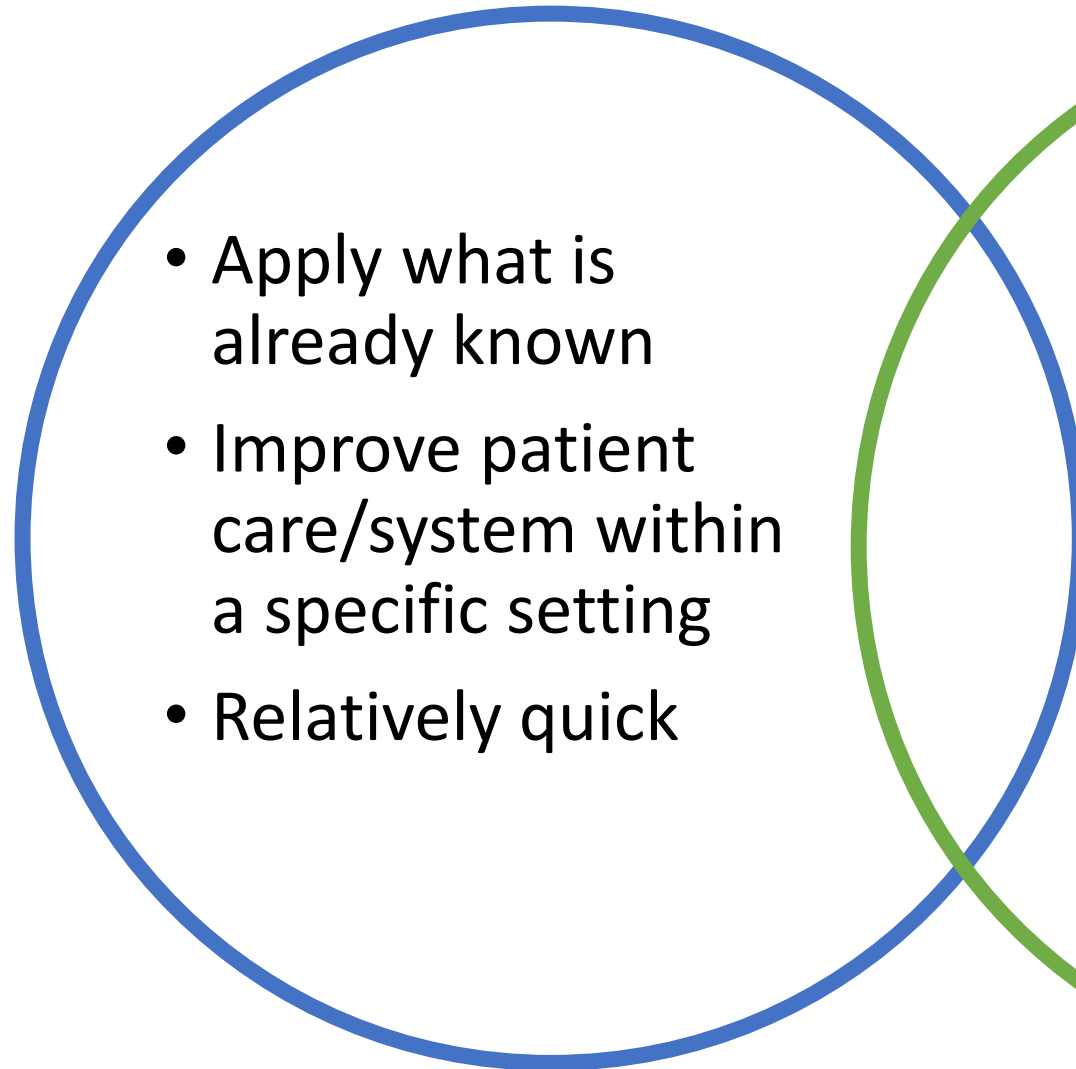
Research

- Apply what is already known
- Improve patient care/system within a specific setting
- Relatively quick
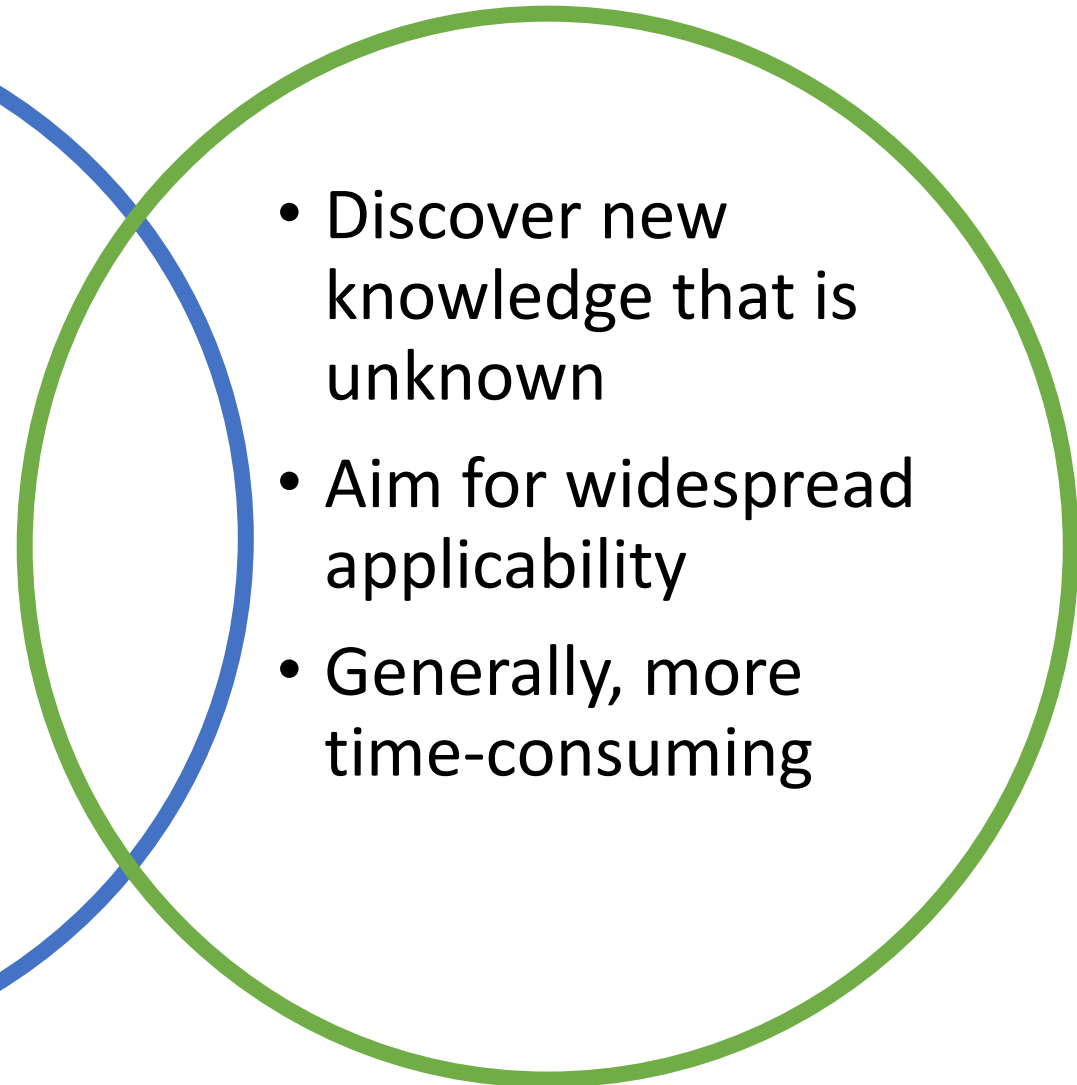
- Discover new knowledge that is unknown
- Aim for widespread applicability
- Generally, more time-consuming

Questions to consider as you get started:

- Is there buy-in from critical frontline staff as well as leadership?
- Can the problem be measured?
- Are the resources needed available?
- Is your project evidence-based? (Consider QI vs. Research)

Sources:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10539144/

https://blog.lifeqisystem.com/quality-improvement-project-idea#:~:text=It's%20often%20better%20to%20'think,be%20easy%20to%20measure%20too.

Tip 1: Start Small

Benefits:

- Easier to begin
- Typically, easier to measure progress
- If smaller ideas work, then you can look to build on them (spread)
- If idea does not work, there has been minimal disruption.

DREAM BIG.
START SMALL.
BUT MOST OF ALL,
START.

SIMON SINEK

Sources:

https://blog.lifeqisystem.com/quality-improvement-project-idea#:~:text=It's%20often%20better%20to%20'think,be%20easy%20to%20measure%20too
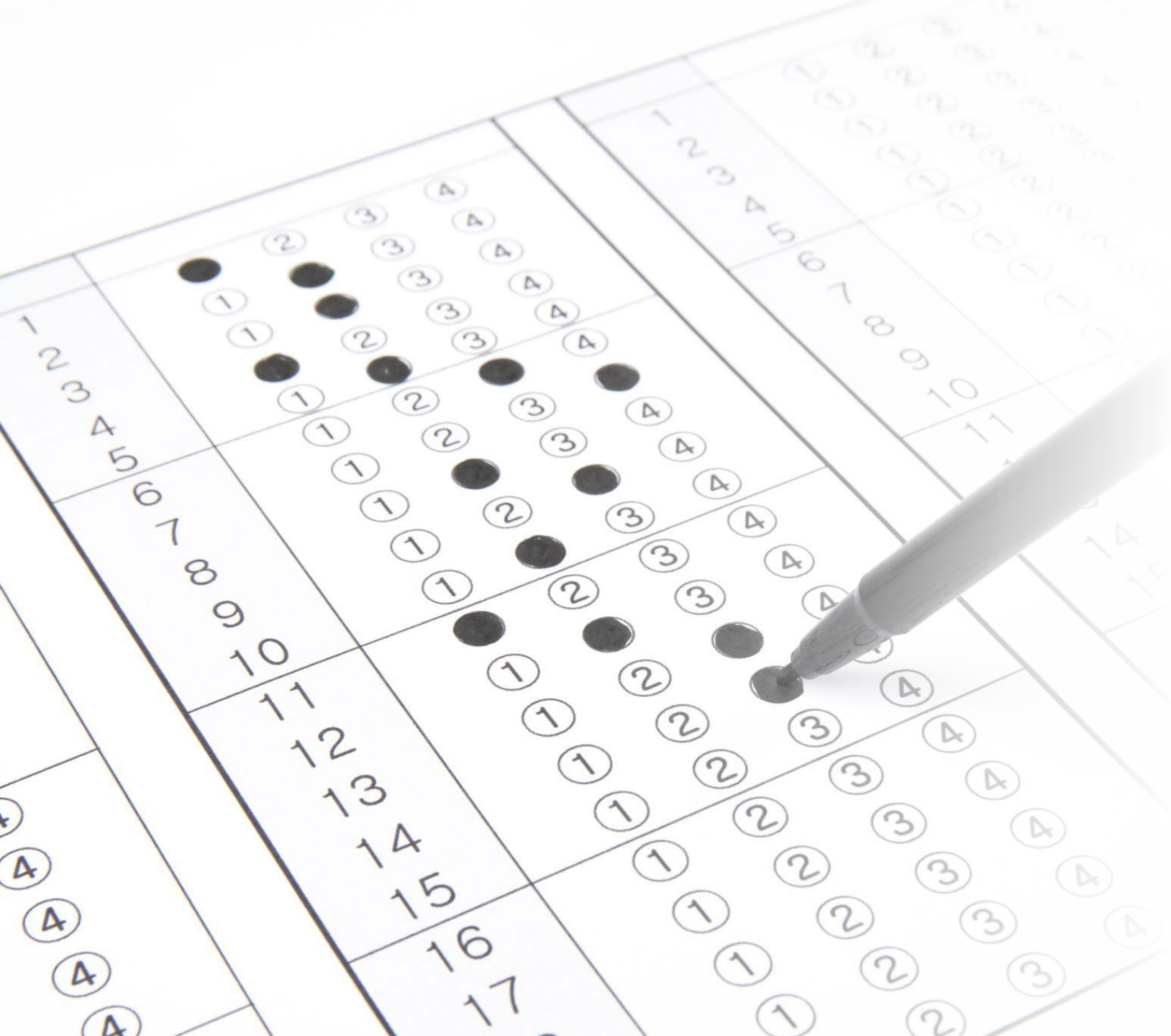
Check for Understanding

Is this a QI project?

The rate of catheter-associated urinary tract infections (CAUTI) has increased at Big Apple Hospital. A healthcare team realized that catheters were being left in longer than needed. The team hopes to decrease the number of CAUTI by implementing an evidenced-based nursing documentation process in one of the units.

Yes

"Lose the Tube": A Choosing Wisely initiative to reduce catheter-associated urinary tract infections in hospitalist-led inpatient units

Hyung J Cho [1], Steve Khalil [2], Jashvant Poeran [3], Madhu Mazumdar [3], Nathaniel Bravo [4], Fran Wallach [5], Brian Markoff [6], Nathan Lee [7], Andrew S Dunn [6]

Affiliations + expand
PMID: 27919427   DOI: 10.1016/j.ajic.2016.10.023

Abstract

We developed a multidisciplinary initiative, "Lose the Tube," focused on a Choosing Wisely recommendation to decrease catheter-associated urinary tract infection (CAUTI) rates and catheter days. Through an electronic health record catheter identification tool, daily interdisciplinary query, and clinician education, our multifaceted intervention reduced mean per-person catheter days from 3.3 to 2.9, decreased CAUTI rates from 2.85 to 0.32 per 1,000 catheter days, and reduced cost by $32,245.

Keywords: Hospital medicine; Infection control; Nosocomial infections; Patient safety.

Source: https://pubmed.ncbi.nlm.nih.gov/27919427/

Is this a QI project?

Providers at Music City Clinic want to reduce instances of heart disease among their family medicine patients. They would like to compare two medications to treat heart disease to see which one works better.

No

Is this a QI project?

A Springfield surgeon performed a procedure on the wrong side of a patient's body. This is the third time this month. A team opens an investigation to collect data on the incident so that they can share with The Joint Commission. The team also hopes to work with healthcare units throughout the state.

No

Is this QI Project?

A healthcare team observed that many opportunities to de-escalate antibiotics are missed at Tarheel Medical Center. They would like to implement routine procedures for clinicians by reviewing the appropriateness of all antibiotic use 48 hours after the initial orders for patients. They will start with the North Piedmont Campus.

Yes

Case Study: Former IHQI supported project!

Read more here: https://www.med.unc.edu/ihqi/programs/improvement-scholars-2/implementation-of-antibiotic-time-outs-at-hillsborough-hospital/

How to Lead an Effective QI Project

problem definition

analysis

testing

implementation

sustaining change

QI Project Cycle

Source: https://www.med.unc.edu/ihqi/resources/
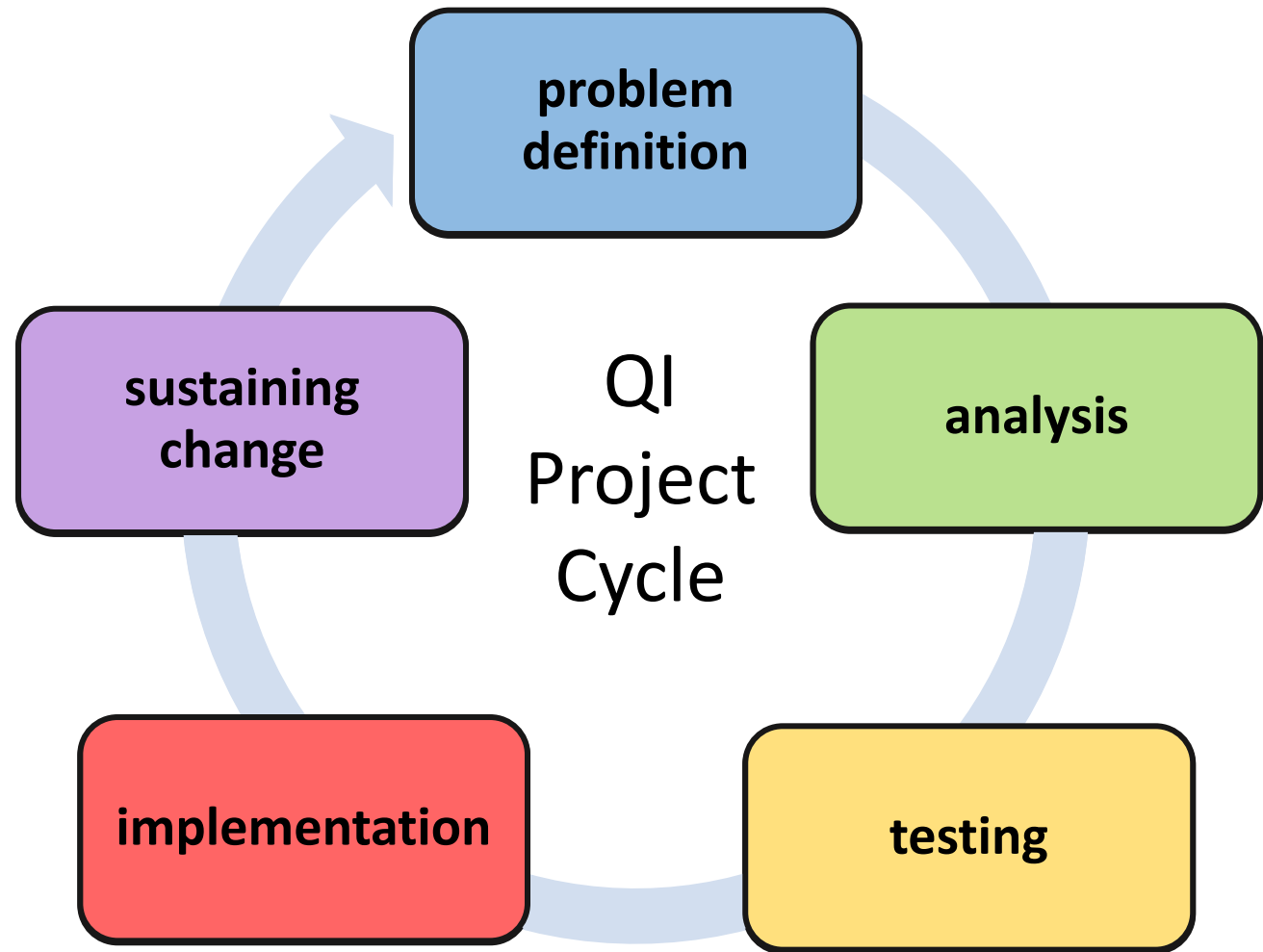
Common QI Methodologies

	VALIDATE PROBLEM	ASSESS & FOCUS PROBLEM	VERIFY ROOT CAUSES	CHANGE & EVALUATE PROCESS	VERIFY IMPROVEMENT	MAINTAIN PROCESS GAINS
	Is there a problem?	What is the extent of the problem?	What is causing the problem?	How can we fix what caused the problem?	How do we know we improved?	How do we keep the problem from happening again?
A3 THINKING	Reason for Action	Current State & Future State	Gap Analysis	Solution Approach, Rapid Experiments, Completion Plan	Confirmed State	Insights
PDSA CYCLE (DEMING WHEEL)	PLAN			DO	STUDY	ACT
SIX SIGMA (DMAIC)	DEFINE	MEASURE	ANALYZE	IMPROVE		CONTROL
NURSING PROCESS	ASSESS		DIAGNOSE	PLAN	IMPLEMENT	EVALUATE
MODEL FOR IMPROVEMENT	PLAN: AIM, MEASURES, IDEAS			DO	STUDY	ACT
THE SCIENTIFIC METHOD	ASK A QUESTION	DO BACKGROUND RESEARCH	CONSTRUCT A HYPOTHESIS	PLAN & DO EXPERIMENT	ANALYZE DATA & DRAW CONCLUSIONS	COMMUNICATE RESULTS

Model for Improvement

What are we trying to accomplish?

How will we know that a change is an improvement?

What change can we make that will result in improvement?

Act | Plan

Study | Do
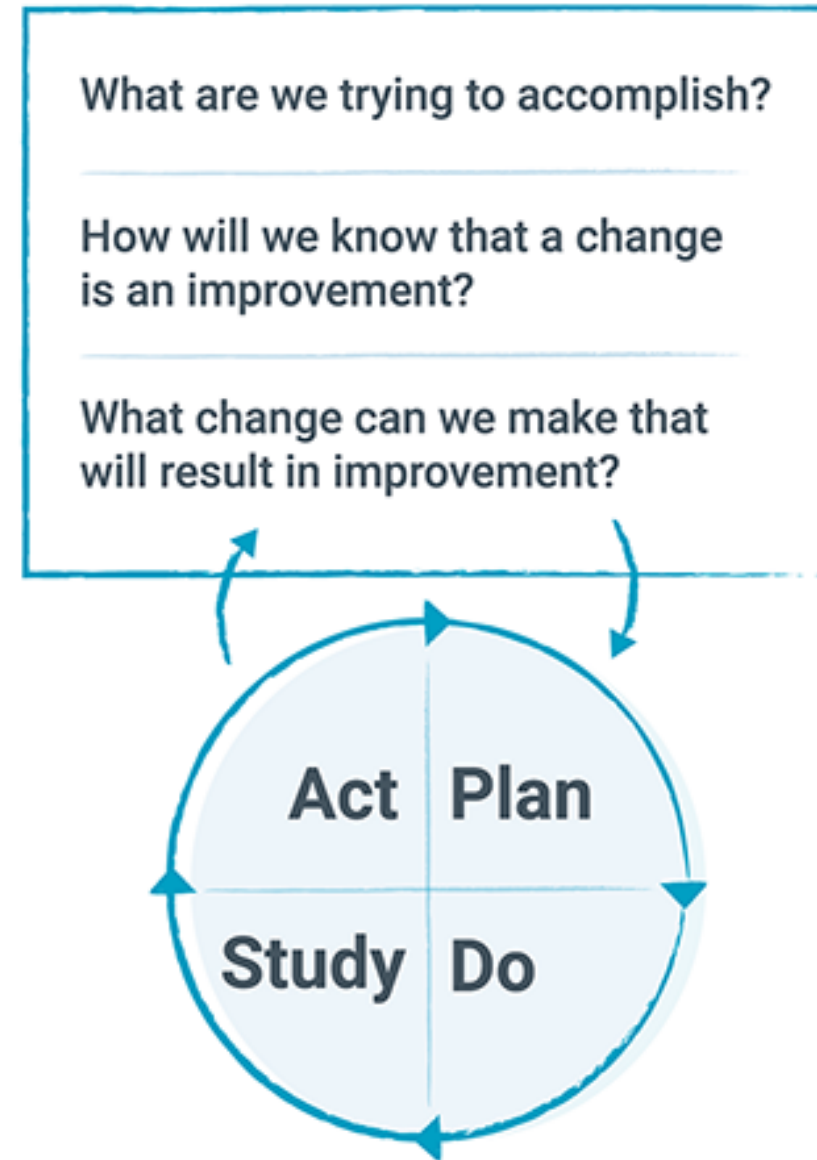
Source: Adapted from The Improvement Guide (2009)

Source: https://www.ihi.org/resources/how-to-improve

Tip 2: Consider major influencers in your project

- Define your aim
  - Good rule of thumb: Double the good/half the bad
- Consider 'big" ideas (drivers) and activities (change ideas) that will help you bring about change in your QI project
- Tool: Driver Diagram

Source: https://blog.lifeqisystem.com/what-is-driver-diagram

GOAL/AIM

Ask yourself:
- What is the big problem you are addressing?
- What are you trying to achieve (aim)?

DRIVERS

Ask yourself:
- What are the problems that cause bigger problems?
- What are you trying to achieve (aim for each driver)?

PROJECTS/ACTIVITIES

Ask yourself:
- What projects/activities can you undertake that will result in the improvement you seek?
- What are the changes you want to test before implementing?

← Which in turn contribute directly to the bigger aim ← Contribute directly to the drivers

THE GOAL ← PRIMARY DRIVER ← PROJECT 1 / PROJECT 1

← PRIMARY DRIVER ← PROJECT 1

← PRIMARY DRIVER ← PROJECT 1 / PROJECT 1

Sample Driver Diagram

Implementation of Antibiotic Time-Outs at Hillsborough Hospital Key Driver Diagram
Updated 9/7/18

GLOBAL AIM

Prevent Patient Harm

SMART AIM

Increase AAA team Antibiotic Time Outs from 0% to 80% by MM/DD/YY

FUTURE AIMS

-Increase Antibiotic Time Outs from 0% to 80% across all HBR medical services by MM/DD/YY

-Increase Antibiotic Time Outs from 0% to 80% across X Med Center Teams by MM/DD/YY

PRIMARY DRIVERS (Needed system factors)

Timely patient identification

Team real time knowledge of eligible patients

Standardized antibiotic time out process

Standardized antibiotic de-escalation process

Monitoring and feedback process

SECONDARY DRIVERS (Changes to test)

-Refine inclusion/exclusion criteria
-Identify patients using iVent note

-TBD

-Test paper vs Epic Time Out form
-Complete Time Out immediately after CAPP Rounds

-TBD

-Standardize chart audits using an antibiotic de-escalation table

Key: Dashed line=active PDSAs

analysis

Tip 3: Understand your current process

Methods:

- Complete a Gemba Walk
  - (Gemba means "real place" in Japanese)
- Look for any wastes in the process
- Tool: Process Map

Remember "DOWN TIME"

Lean Six Sigma: 8 Wastes

Defects
Efforts caused by rework, scrap and incorrect information.

Overproduction
Production that is more than needed or before it is needed.

Waiting
Wasted time waiting for the next step in a process.

Non-Utilized Talent
Underutilizing people's talents, skills & knowledge.

Transportation
Unnecessary movements of products & materials.

Inventory
Excess products and materials not being processed.

Motion
Unnecessary movements by people (ex. walking).

Extra-Processing
More work or higher quality than is required by the customer.

Source: https://www.automationmag.com/7872-seven-wastes-of-lean-and-how-to-eliminate-them/

Sample Process Map

Antibiotic Time Out SIPOC
August 28, 2018

Suppliers	Inputs	Process Steps	Outputs	Customers
Supplies input to start the process	Trigger that initiates the process	High level steps that transform the input into output	Product or service generated by the process	Receives the output of the process
E. Patient presents with possible or actual bacterial infection	D. Provider prescribes a new course of antibiotics	C1 Review all inpatients who are on antibiotics		
		C2 Identify patients who are 48 hours into a new antibiotic course		
		C3 Notify the provider of patients who are 48 hours into a new antibiotic course		
		C4 Complete an antibiotic time out and document outcome		
		C5 Change antibiotic regime as per timeout findings	A1 Antibiotic time out is completed in a timely manner A2 Diminished patient risk of iatrogenic harm A3 Compliance with best practice/ standards of care	B1 The patient B2 The care team (easy to do the right thing, every patient, every time) B3 Administration and regulatory bodies

Tip 4: Develop your measure plans

analysis

- Outcome measures - "voice of the patient or customer;" the end results of the QI work.

- Process measures - "voice of the workings of the system;" the changes your QI efforts make to the inputs or steps that contribute to system outcomes

- Balancing measures - determine whether changes designed to improve one part of the system are causing new problems in other parts of the system.
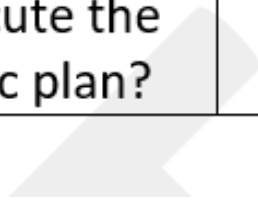
Source: https://www.hqontario.ca/portals/0/documents/qi/qi-measurement-primer-en.pdf

Sample Measurement Plan

MEASURES MAP

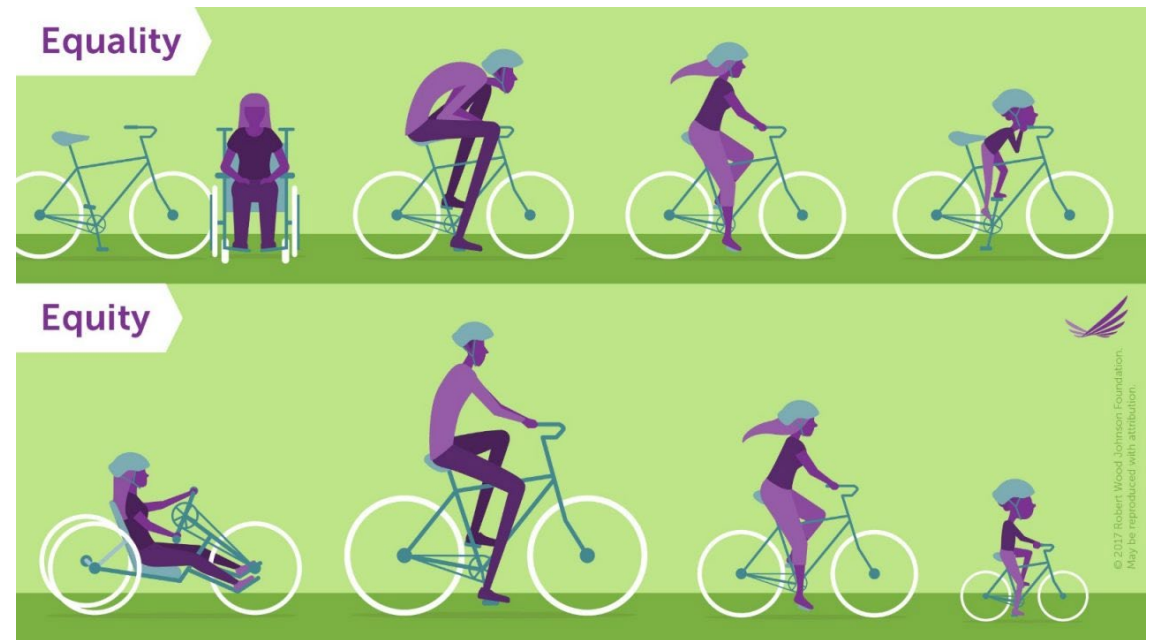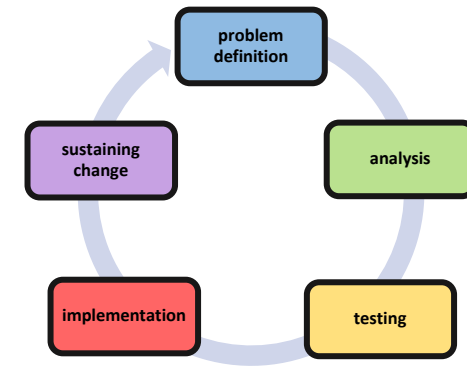| OUTCOME	PROCESS	BALANCING
Antibiotic De-Escalation How often do we de-escalate antibiotics?	**Antibiotic Time Out Performed** How often do we conduct antibiotic time outs?	**Antibiotic Escalation** How often are antibiotics escalated?
Time to De-Escalation How quickly do we de-escalate?	**Time Out Plan Follow Through** How often do we execute the documented antibiotic plan?	

Tip 5: Consider equity throughout the process

Unfortunately, equity is sometimes forgotten in QI work

Potential Action Steps

- Routinely have intentional discussions about inequities with your team

- Stratify data by health equity measures (i.e., race, ethnicity and language)

- Consult your equity and inclusion division/unit teammates

Source: Robert Wood Johnson Foundation; https://www.rwjf.org/en/insights/our-research/infographics/visualizing-health-equity.html

testing
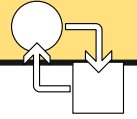
Tip 6: Complete PDSAs…often

- The Plan Do Study Act (PDSA) approach enables you to implement and trial small scale ideas quickly with minimal disruption to patient care

- QI is an ongoing process, and many cycles can be completed for one project.

What is next after the PDSA?

- **Adopt**: Did it work? Great! Let's adopt this change and hardwire it into the system.

- **Adapt**: Not quite there? Time to adapt. Think about changes you can make to improve and start another PDSA cycle.

- **Abandon**: Did you observe no improvement, or worse outcomes? Time to abandon the idea.

Source: https://www.hopkinsmedicine.org/nursing/center-nursing-inquiry/nursing-inquiry/quality-improvement
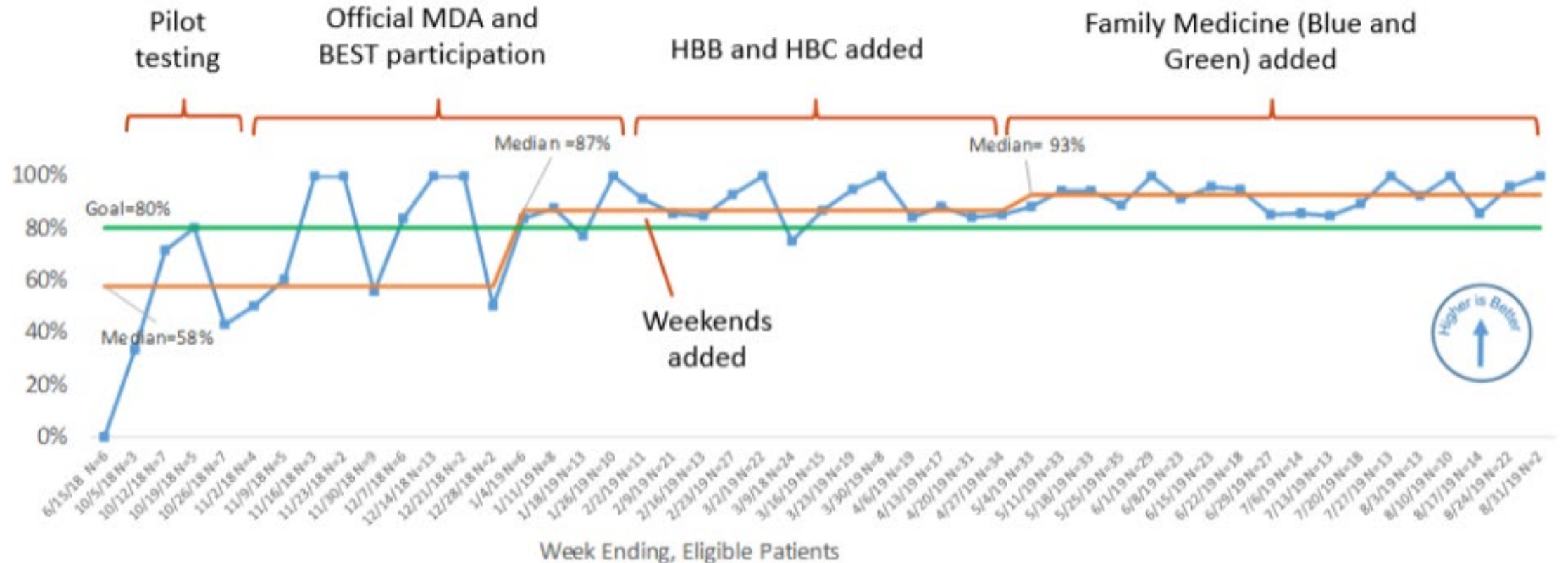
Sample PDSA

What should the team do?

Reminder: Goal is 80%

Adapt

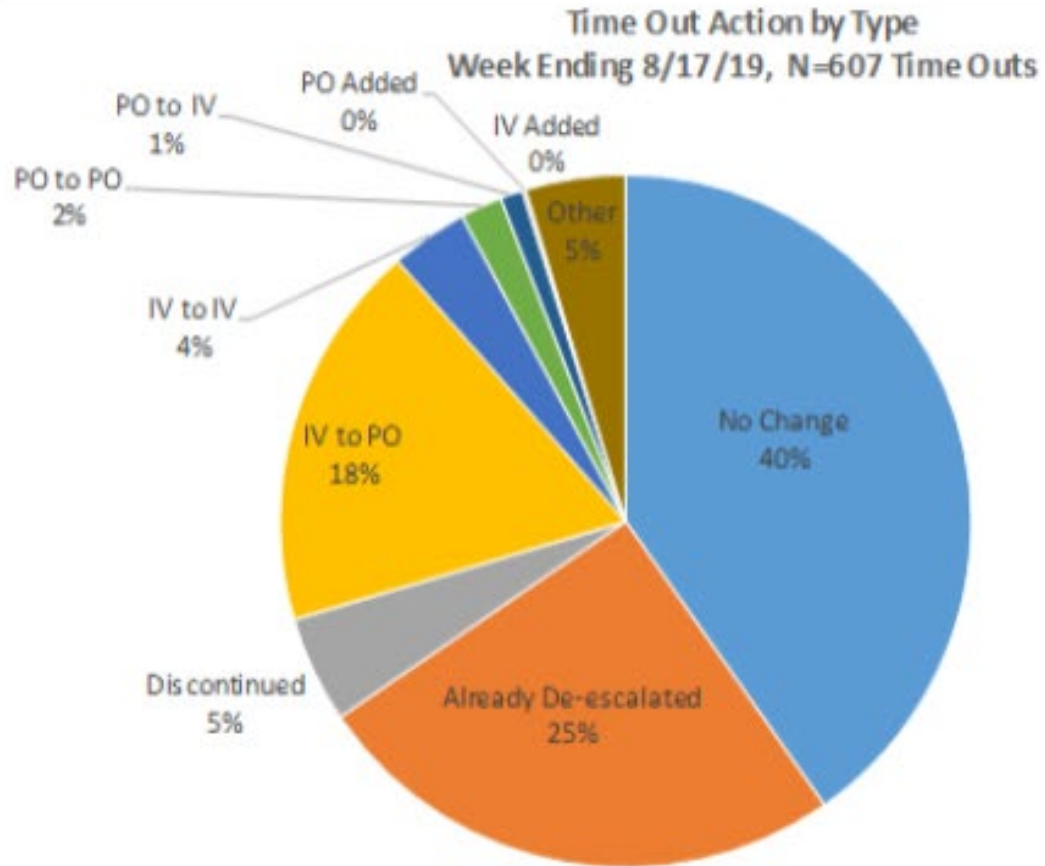## PDSA: Expansion to Non-Teaching Hospitalist Teams

PLAN	Met with Hospitalists and Pharmacy team members at their staff meetings.
DO	On 2/4/19 pharmacists-initiated time outs with hospitalists
STUDY	First week 7/9 (77.8%) patients had time out. No significant issues or concerns

Project Impact

Percent Eligible Patients with an Antibiotic Time Out, N=675 Eligible Patients

Project Impact

Time Out Action by Type
Week Ending 8/17/19, N=607 Time Outs

- No Change 40%
- Already De-escalated 25%
- IV to PO 18%
- Discontinued 5%
- IV to IV 4%
- PO to PO 2%
- PO to IV 1%
- PO Added 0%
- IV Added 0%
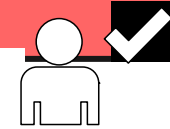- Other 5%

~35% of time outs result in some change

23% result in de-escalation of antibiotics
- 5%: antibiotic discontinuation
- 18%: IV-to-PO conversion

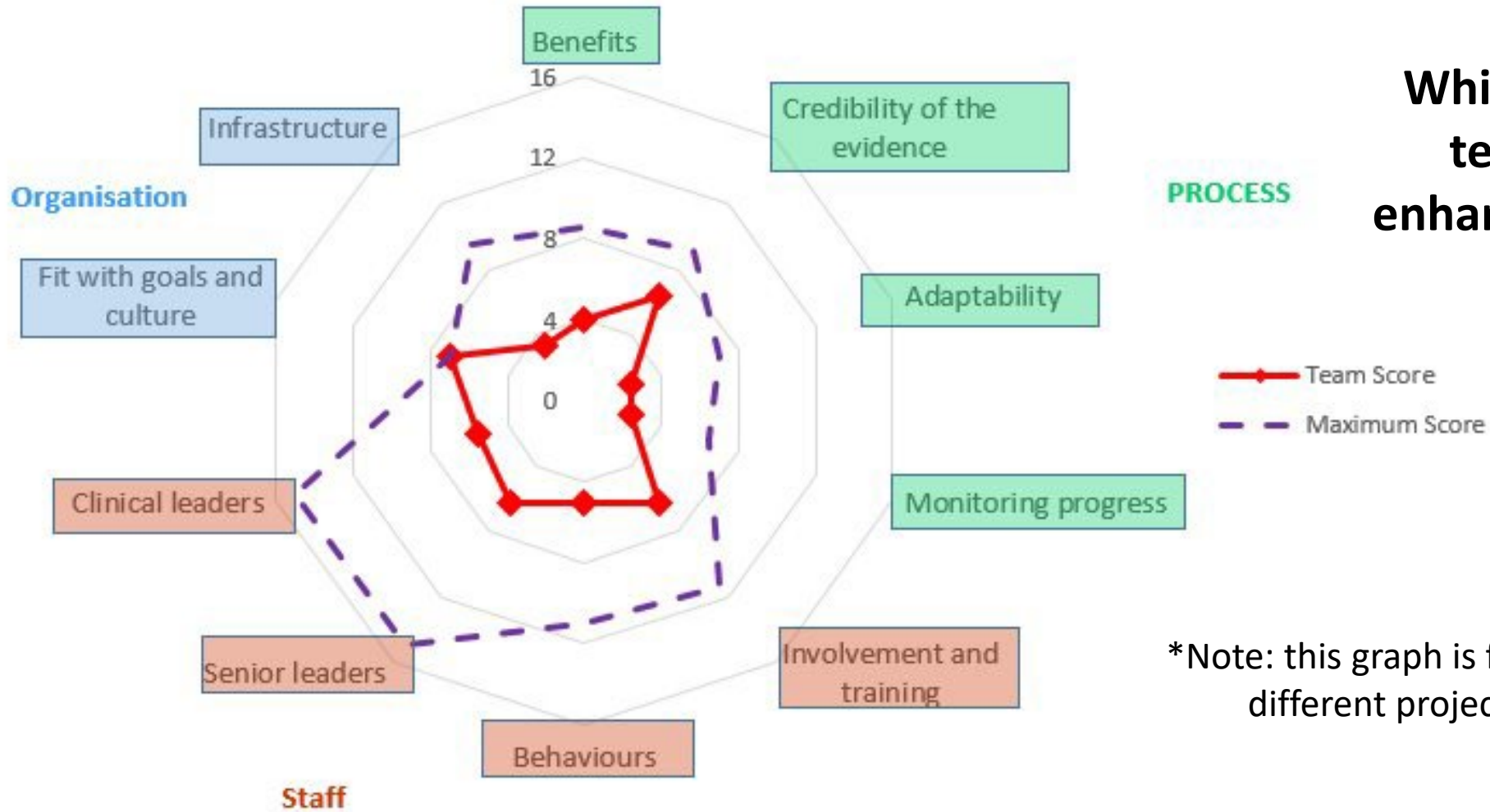Occasional time outs result in *addition* of antibiotics or PO-to-IV conversion

Tip 7: Plan for Sustainment

implementation

Portal Diagram

Which area do you think the team should focus on to enhance project sustainability?

Staff

*Note: this graph is from a different project

Sample Sustainment Plan

Sustainment Plan

Our intent is for this project to endure, supported by the Antimicrobial Stewardship Program. Two key elements are required, ideally by 9/1/19

1. Greater automation of our data collection.
   - Current process is highly labor-intensive and limits our ability to spread further

2. Facilitating the identification of time out-eligible patients and easier documentation of time outs.
   a) Identification of time out-eligible patients currently falls on participating pharmacists, which adds to their work and creates vulnerabilities
   b) Documentation of time outs currently requires a "dot-phrase" that is somewhat cumbersome and used only by pharmacists. Ideally...

Tip 8: Share what you have learned

Benefits:

- Contributes to a culture of QI at your organization (and beyond!)
- Helps with sustainability of your project
- Opportunities to gain more resources and spread
- Gain inspiration from other projects

Note: Not necessarily limited to publishing
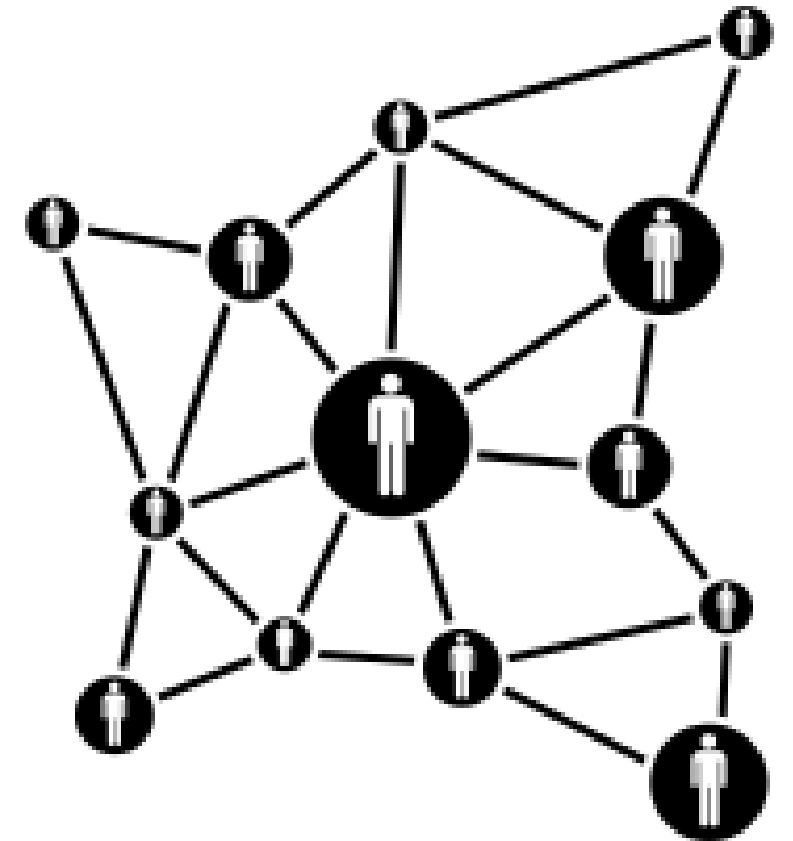
Article Contents

Abstract

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1131. You're Never Too Old for a Time-Out: Implementing Antibiotic Time-Outs on Pediatric Inpatient Teams 🔓

Catherine Hayes, MD, Michael J Swartwood, BSN, RN, CAPM,
Eric Zwemer, MD, Danielle Doughman, MSPH, Nikolaos Mavrogiorgos, MD,
Lindsay M Daniels, PharmD, Rebecca Wellborn, RN, MSN, Daniel Hill, ASN,
William Wilson, PharmD, BCPS, Zachary Willis, MD, MPH

📄 PDF   ▮▮ Split View   66 Cite   🔑 Permissions   ◁ Share ▾

Abstract

Background

Antibiotic overuse leads to antimicrobial resistance, adverse

Source: https://academic.oup.com/ofid/article/8/Supplement_1/S656/6450877?login=false

Key Takeaways

- Start small
- Consider major influencers in your project
- Understand your current process
- Develop your measurement plan
- Consider equity throughout the process
- Complete PDSAs...often
- Plan for sustainment
- Share what you learned

Thank you!

Joy Martin

Joy.martin@unchealth.unc.edu

Please reach out if you have any questions!